

shifting arm means pivotally moveable between alternate  
shifting positions by shoulder means carried by said  
10 drive means for shifting said carrier between said  
alternately engageable positions; and  
cam means on said carrier, and follower means slideably  
engaging said cam means for biasing and retaining  
said carrier in a selected one of said alternately  
15 engageable positions until shifted therefrom by said  
shifting arm means.

*D,* <sup>65</sup> Claim ~~77~~<sup>65</sup>. The sprinkler unit of Claim ~~76~~<sup>64</sup> wherein  
said cam means comprises a cam lobe and said follower means  
engages said lobe on opposite sides thereof for biasing  
and retaining said carrier in a selected one of said  
5 alternately engageable positions.

<sup>66</sup> Claim ~~78~~<sup>66</sup>. The sprinkler of Claim ~~77~~<sup>65</sup> wherein said  
spring biased follower means comprises a generally L-shaped  
leaf spring.

<sup>67</sup> Claim ~~79~~<sup>67</sup>. The sprinkler of Claim ~~78~~<sup>66</sup> wherein said cam  
lobe is on said carrier and said spring biased follower  
means is mounted on adjacent housing structure.

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<sup>68</sup>  
Claim ~~80~~. The sprinkler of Claim <sup>67</sup>~~79~~ wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

<sup>69</sup>  
Claim ~~81~~. The sprinkler of Claim <sup>65</sup>~~77~~ wherein said cam lobe is on said carrier and said spring biased follower means is mounted on adjacent housing structure.

<sup>70</sup>  
Claim ~~82~~. The sprinkler of Claim <sup>69</sup>~~81~~ wherein:  
drive means comprises a drive gear driven by a drive motor and mounted for rotation about a second axis spaced from said first axis;  
5 said carrier is mounted for pivotal movement about said second axis; and  
said shifting arm means is mounted for pivotal movement about said first axis.

<sup>71</sup>  
Claim ~~83~~. The sprinkler unit of Claim <sup>70</sup>~~82~~ wherein:  
said carrier comprises a yoke surrounding said first axis and said shifting arm means engages said carrier through lost motion means comprising shoulder means  
5 on the opposite side of said first axis from said second axis.

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<sup>72</sup>  
Claim ~~84~~. The sprinkler of Claim <sup>65</sup>~~77~~ wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

<sup>73</sup>  
Claim ~~85~~. The sprinkler of Claim <sup>64</sup>~~76~~ wherein:  
drive means comprises a drive gear driven by a drive motor and mounted for rotation about a second axis spaced from said first axis;  
5 said carrier is mounted for pivotal movement about said second axis; and  
said shifting arm means is mounted for pivotal movement about said first axis.

<sup>74</sup>  
Claim ~~86~~. The sprinkler unit of Claim <sup>64</sup>~~76~~ wherein:  
said carrier comprises a yoke surrounding said first axis and said shifting arm means engages said carrier through lost motion means comprising  
5 shoulder means on the opposite side of said first axis from said second axis.

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Claim ~~87~~. An oscillating sprinkler unit, comprising:  
a sprinkler head mounted for rotation about a first axis;  
a drive motor;

a reversible gear train for drivingly connecting said

5 drive motor to said sprinkler head for driving said  
sprinkler head in alternate directions, comprising a  
final drive gear connected to said sprinkler head  
shiftable drive means comprising a carrier and  
alternately operable terminal gear means on said  
10 carrier shiftable with said carrier to alternately  
engageable positions with said final drive gear for  
driving said sprinkler head in alternate directions;

shifting arm means pivotally mounted adjacent said  
carrier and moveable between alternate shifting  
15 positions by engagement with shoulder means carried  
by said gear train, and lost motion means for  
connecting said shifting arm means with said  
carrier for shifting said carrier between said  
alternately engageable positions upon movement of  
20 said shifting arm means between said alternate  
shifting positions; and

cam means on said carrier slideably engageable by  
adjacent biasing follower means for biasing and  
maintaining said carrier in a selected one of said  
25 alternately engageable positions until shifted  
therefrom by said shifting arm means.

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<sup>76</sup>  
Claim ~~88~~. The sprinkler unit of Claim <sup>75</sup>~~87~~ wherein said cam means comprises a cam lobe and said adjacent biasing follower means comprises spring biased follower means engaging said lobe on opposite sides thereof.

<sup>77</sup>  
Claim ~~89~~. The sprinkler of Claim <sup>76</sup>~~88~~ wherein said spring biased follower means comprises a generally L-shaped leaf spring.

<sup>77</sup>  
Claim ~~90~~. The sprinkler of Claim <sup>77</sup>~~89~~ wherein said cam lobe is on said carrier and said L-shaped leaf spring biased is mounted on adjacent housing structure.

<sup>79</sup>  
Claim ~~91~~. The sprinkler of Claim <sup>76</sup>~~88~~ wherein said cam lobe is on said carrier and said spring biased follower means is mounted on adjacent housing structure.

<sup>80</sup>  
Claim ~~92~~. The sprinkler of Claim <sup>76</sup>~~88~~ wherein said cam lobe is of a substantially symmetrical V-shape; and said spring biased follower means comprises a generally L-shaped leaf spring.

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*81* Claim ~~93~~<sup>93</sup>. The sprinkler of Claim ~~92~~<sup>80</sup> wherein:

reversible gear train comprises a drive gear driven by  
said drive motor and mounted for rotation about a  
second axis spaced from said first axis;

- 5 said carrier is mounted for pivotal movement about  
said second axis; and  
said shifting arm means is mounted for pivotal movement  
about said first axis.

*82* Claim ~~94~~<sup>94</sup>. The sprinkler unit of Claim ~~93~~<sup>81</sup> wherein:

said carrier comprises a yoke surrounding said first  
axis and said shifting arm means engages said  
carrier through said lost motion means comprising  
5 shoulder means on the opposite side of said first  
axis from said second axis.

*83* Claim ~~95~~<sup>95</sup>. The sprinkler of Claim ~~87~~<sup>75</sup> wherein:

said reversible gear train comprises a drive gear  
driven by said drive motor and mounted for rotation  
about a second axis spaced from said first axis;

- 5 said carrier is mounted for pivotal movement about  
said second axis; and  
said shifting arm means is mounted for pivotal movement  
about said first axis.

*84*  
Claim ~~96~~<sup>75</sup>. The sprinkler unit of Claim ~~87~~<sup>75</sup> wherein:  
said carrier comprises a yoke surrounding said first  
axis and said shifting arm means engages said  
carrier through said lost motion means comprising  
5 shoulder means on the opposite side of said first  
axis from said second axis.

*85*  
Claim ~~97~~<sup>84</sup>. The sprinkler of Claim ~~96~~<sup>84</sup> wherein said  
cam lobe is of a substantially symmetrical V-shape; and  
said spring biased follower means comprises a generally  
L-shaped leaf spring.

*86*  
Claim ~~98~~<sup>86</sup>. An oscillating sprinkler unit, comprising:  
a housing having a generally cylindrical configuration  
with a central axis, an inlet at a lower end for  
attachment to a source of water and an outlet at  
5 an upper end;  
a sprinkler head mounted at said upper end for rotation  
about said central axis;  
a drive motor mounted in said housing for driving said  
sprinkler head;  
10 a shiftable gear train comprising terminal drive gear  
means including an internal gear connected to said  
sprinkler head, shiftable means for alternatively  
shifting said terminal drive gear means alternatively

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into engagement with said internal gear for  
15 driving said sprinkler head in alternate directions;  
said shiftable drive means comprising a drive shaft  
driven by said drive motor and operatively  
connected to a drive gear mounted for rotation  
about a second axis offset from said first axis;  
20 a pivoting carrier mounted for pivotal movement about  
said second axis;  
one of said terminal gear means mounted on said carrier  
on one side of said second axis, and the other of  
said drive gears mounted on said carrier on the  
other side of said second axis;  
D 25 a shifting arm mounted adjacent said carrier for pivotal  
movement about said first axis;  
lost motion means disposed between said shifting arm  
and said carrier for connecting said shifting arm  
30 to said carrier for shifting said terminal drive  
gear means to alternately engageable positions;  
first over-center biasing means for maintaining said  
shifting arm means in a selected one of said  
alternately shifting positions; and  
35 over-center cam means on said carrier slideably  
engageable by adjacent spring biased follower  
means for biasing and maintaining said carrier  
in a selected one of said alternate engageable  
positions.

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<sup>87</sup>  
Claim ~~99~~. A sprinkler unit according to Claim <sup>86</sup>~~98~~

wherein:

5 said over-center cam means comprises a dual faced cam  
and said follower means comprises a generally  
L-shaped spring disposed between said carrier and  
said housing for biasing said shifting arm to said  
one of said alternately shifting positions.

<sup>88</sup>  
Claim ~~100~~. The sprinkler of Claim <sup>87</sup>~~99~~ wherein said  
dual faced cam is on said carrier and said spring is  
mounted on adjacent housing structure.

<sup>89</sup>  
Claim ~~101~~. The sprinkler of Claim <sup>88</sup>~~100~~ wherein said  
cam has a lobe that is of a substantially symmetrical  
V-shape; and  
said spring comprises a generally L-shaped leaf spring.

REMARKS

U. S. Patent No. 4,948,052, issued August 14, 1990,  
recently came to the attention of applicant and it was  
seen that Claim 1-26 thereof could be made in subject  
application. Claims 1 through 26 of U. S. Patent  
No. 4,948,052 are presented herewith as new Claims 76  
through 101 for the purpose of having an INTERFERENCE

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